Amendments to the Specification:

Please replace paragraph [0025] with the following amended paragraph:

[0025] Between crossed polarizers 6 the cell's transmission is described by:

$$I_{out} = I_0 \sin^2 2\alpha \sin^2 ([[2]]\pi d \Delta n / \lambda).$$

where I_0 = input light, α = angle between input polarizer and director (orientation of LC molecules), d = cell thickness, Δn = optical anisotropy, λ = light wavelength.

Please replace paragraph [0026] with the following amended paragraph:

[0026] Figure 2 shows the cell's transmission under applied electrical pulses between crossed polarizers (α= 45° with respect to LC director). The cell studied contained dyed nematic (ZLI3572 from Merck) and 2% silica nanoparticles (Aerosil® R974 from Degussa-Huls). The nanoparticles have an average primary particle size of 12 nm. They comprise fumed silica aftertreated with dimethyldichlorosilane. The SiO_2 content of the nanoparticles is >99.8%. The cell thickness was 10 µm. 15 ms 30 V pulses were applied. We found that depending on the polarity of the applied pulses the cell behaves differently. When the positive sign is connected to the planar side the cell switches to a homeotropic vertical state and this state is memorized. Between crossed polarizers this state appears dark, so LC molecules stay vertical and $\Delta n = 0$. In this state applying the same polarity pulse does not produce any change. However, a pulse with opposite polarity (minus to planar side) results in switching to the initial homeoplanar state. The next pulse of the same polarity causes an electro-optical response similar to that of a pure nematic LC without memorizing. Figure 2 shows that the behaviour of the fronts of switching on and switching off is different. The switching on (Figure 3a) is much sharper and is determined by dielectric interaction with electrical field t_{on} [[=]]α $\gamma/\Delta\varepsilon E^2$, where γ = viscosity, $\Delta\varepsilon$ = dielectric anisotropy, E = electrical field. This time is usually from 50 µs to 1 ms for nematic LCs and depends on electric field and dielectric anisotropy. The switching off (Figure 3b) goes slowly and is consistent with free relaxation of the molecules to their initial state due to elastic deformation. This time is described by t_{off} [[=]]α γd^2 for nematics and usually varies from 10 to 50 ms. In the cell with nanoparticles

the vertical state is memorized by an applied pulse with suitable polarity (positive sign to planar side for the specified example).

Please replace paragraph [0032] with the following amended paragraph:

[0032] We believe that the invention provides a different mechanism of bistable switching – electrophoretically controlled bistability in LCDs. According to this mechanism, the electrophoretric effect, which takes place in the cell, is responsible for the memorized effect. This was tested in a cell with in-plane electrodes 2, as shown in Figure 7. The mixture of LC with nanoparticles 5 was deposited over a bottom substrate 1a and covered the area between the electrodes. A thin (100 μm) glass plate 1b covered the LC layer. The cell was observed by polarizing microscopy. Electrical pulses with reversed polarity were applied to the electrodes 2. In Figures 7 a,b are given pictures of the switching process between in-plane electrodes for a composition comprising liquid crystal E7 doped with 2% OX50 silica (40 nm). In the texture of the mixture is observed quite big size clusters, which are formed by aggregation and enables the observation of the migration process. In the beginning the aggregates are randomly distributed in the LC. After application of the pulse the aggregates begin the moving towards the electrode with suitable polarity, in this case towards the electrode with a plus sign. Depending on amplitude and duration of pulse they are fully collected close to the electrode, forming a close-packed network of ~~the~~ nanoparticles. This state is stable after switching off the electrical pulse. After reversing polarity the aggregates are moved and collected close to the second electrode, and the area close to the first electrode is cleaned of close-packed nanoparticles networks. The same behaviour takes place for a mixture with smaller size (7 nm) nanoparticles. In this case the network of the nanoparticles is observed as a dense layer, which moves between in-plane electrodes. The mobility of nanoparticles was determined from the expression for drifting under an electrical field $t_{dr} = d^2/\mu V$, where d is the distance between electrodes, V = applied voltage, μ = mobility. The distance between electrodes is 100 μm and there is optically observed that the pulse 100 ms with amplitude 200 V forces full drifting of the nanoparticles from one electrode to the second electrode. Consequently we have

determined the mobility $\mu = d^2/ t_l V = 10^{-4}cm^2/ 10^{-1}s\ 2.10^2\ V = 5.10^{-6}\ cm^2/ Vs$, which is a typical value for mobility of solid nanoparticles in liquids.